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JOHN ARDERNE AND EARLY ENGLISH MEDICAL WRITERS.

By John S. Billings, M. D., *Surgeon U. S. A.*

[*Read before the Hospital Historical Club, Feb.* 12, 1894.]

Dr. Billings spoke of the early surgical literature of England, including the Leechbook, printed as Volume II of "Leechdoms, Wortcunning and Starcraft of Early England," the surgical references in the book of the Physicians of Myddvai and the works of Arderne, Vicary, Gale, Clowes, and Lowe. He showed a manuscript volume of the works of John Arderne, recently acquired by the Library of the Surgeon-General's Office, through Mr. Thomas Windsor, the well-known bibliographer, of Manchester, England. This manuscript, which is supposed to date from about 1400 A. D., is imperfect, beginning at folio 41 and ending at folio 139. The Latin is very difficult to make out, as the writer seems to have had a system of ligatures and contractions of his own. There are some writings and drawings upon the margins, mostly illustrating cases of fistula.

The following memorandum by Mr. Windsor gives what is known of his life, and a summary of the contents of the manuscript.

Biography of John Arderne.

All that is really known is that he was born about 1308,* practised in Wiltshire, MS f. 54, "hoc probavi in Vicecomite Wilteshure," and abroad, MS f. 49, "hoc probavi uno Rege et duobus Episcopis in transmarinis partibus," and afterwards at Newark, in Nottinghamshire, from 1349 to 1370, when he removed to London, where he wrote his treatise on fistula in 1376,* and his "Cura oculorum" in 1377.†

It has been supposed or asserted that he was admitted at Montpellier and that he practised in France as a military surgeon (Häser: Lehrb. d. Gesch. d. Med.), that he practised at Antwerp (E. H. in his transl., Sloane, II, 271), that he was at the battle of Crecy (E. Milward in a . . . letter . . . concerning . . . British physiol. & chyrurgical authors), and that he was surgeon to Richard II and Henry IV (W. Beckett in Philos. Trans. V, 30, p. 842).

I am not aware that any of these statements can be proved;

* Brit. Mus. Sloane 75, fol. 146. After saying that his eyes had become much weakened from study and writing up to the 70th year of his age, he says: "Et sciant presentes & futuri quod ego magister Johannes de Ardern chirurgicorum nummus hunc libellum propria manu meo exaravi apud London anno, viz., regni regis Ric. 2i primo et etatis meae lxx." In one MS before me he says (f. 61, r) "Ego Johannes prædictus a prima pestilencia quae fuit anno dom. 1349 usque annum dom. 1370 moram traxi apud Newerk in Corn. . . . (f. 62, r) Postea anno dom. 1370 veni London et ibidem curavi . . ."

*Sloane, 341. "Ego Joannes dictus Arderne cirurgicus scripsi hunc libellum anno domini 1376 ad utilitatem & conservaciorem sanitatis humanæ, viz. anno quo princeps Edwards princeps Walliæ primogenitus plius Edwardi regis migravit ad dominum in die S. Trinitatis vi idus Junii."

† 1st year of Richard II.

it may also be noted that he would be about 91 when Henry came to the throne. It may be mentioned that III, 548 Sloane ends "explicit practica Henrici Ardern," and in the Hunterian Library, Glasgow, there is a MS by Johannes Arderon "de judiciis urinarum," written apparently after the time of Henry the 4th.

I may just mention that the MSS in the British Museum are almost invariably imperfect. THOMAS WINDSOR.

CONTENTS OF MANUSCRIPT OF JOHN ARDERNE'S WORKS.

f. 41. Contra colicam et iliacam passionem. Modus ministrandi clysteria.

f. 43. Contra dolorem lumborum et renum. Contra lapidem in renibus.

f. 44. Contra ulcerationes vesicæ vel renum.

f. 45. Confectio olei nardini. Regimen nephrecticorum.

f. 46. Provocans vomitum.

f. 47. Contra saniem mingentes. Confectio olei amigdal. Contra ardorem urinæ et excoriationes virgæ infernis.

f. 48. Contra Shawedepisse (in other MSS Chawdepisse). Scolopendria.

f. 50. Contra lapidem.

f. 52. Contra inflammationes virgæ vel vulvæ.

f. 53. Contra ulcera sub præputio.

f. 55. Contra inflationes testiculorum.

f. 57. Contra lacrimas & ruborem oculorem, etc. Modus purgandi.

f. 61. Cases of fistula ani.

f. 63. Behaviour of surgeon.

f. 67. Argentum vivum.

f. 68. Apostemata in ano.

f. 74. De restrictione sanguinis.

f. 76. Ung. Arabienum Signum perfectæ curitionis.

f. 81. Bubo est apostema infra anum in longaone. Various cases of fistula and other affections of the anus.

f. 85. Pulvis greens. Oleum rosarum. For to make oyle of roses (in English).

f. 86. To make a gode salve for a wounde (in French).

f. 87. Ad clarificandum visum.

f. 88. Confectis pulveris sine pare. Regula de crebra remocione plagarum.

f. 90. Plaga propanda facta cum cultello vel sagitta.

f. 95. Repercussion simplicia.

f. 97. Morsus canis rabidi.

f. 99. Contra emorroides (gives a list of authors made use of).

f. 104. Cauterizantia.

f. 107. For the emorodes.

f. 129. Curitio virgæ inflatæ & calidæ cum rubore.

f. 130. Cura apostematum in genu.

f. 131. Cura apostematum in tibia.

f. 132. Inomodo cognoscitur caro mortua.

f. 133. Contra malum mortuum.

f. 136. Fistulæ &c. in digitis.

TITLES OF WORKS ON SURGERY SHOWN BY DR. BILLINGS.

Thomas Gale: The institution of chyrurgerie. London, 1567. T.

Franciscus Arceus: A most excellent and compendious method of curing woundes in the head, and in other partes of the body, with other precepts of the same arte. Translated by John Read. Whereunto is added the exact cure of caruncle, with a treatise of the fistulæ in the fundament, and other places of the body, translated out of Johannes Ardern. And also the discription of the emplaister called Dia Chalciteos, [etc.]. London, 1588. D.

John Halle: A most excellent and learned woorke of chirurgerie, called chirurgia parua Lanfranci, Lanfranke of Mylayne, his briefe: reduced from dyuers translations to our vulgar or vsuall frase, and now first published in the Englyshe prynte by John Halle chirurgien, who hath therunto necessarily annexed a table, as wel of the names of diseases and simples with their vertues, as also of all other termes of the arte opened. Very profitable for the better understanding of the same, or other like workes, and in the ende a compendious worke of anatomie, more vtile and profitable, then any here tofore in the Englyshe tongue publyshed. An historiall expostulation also against the beastly abusers, both of chyrurgerie and phisicke in our tyme: With a goodly doctrine, and instruction, necessary to be marked and followed of all true chirurgiēs. All these faithfully gathered, and diligently set forth, by the sayde John Halle. London, 1565. D.

William Clowes: A profitable and necessarie booke of obseruations, for all those that are burned with the flame of gun powder, etc., and also for curing of wounds made with musket and caliuer shot, and other weapons of war. Last of all is adioined a short treatise, for the cure of lues venerea, by unctions and other approoued waies of curing, heertofore by me collected: and now againe newly corrected and augmented in the yeere of our Lorde 1596. London, 1596. O.

Peter Lowe: A discourse of the whole art of chyrurgerie; Wherein is exactly set downe the definition, causes, accidents, prognostications and cures of all sorts of diseases, both in generall and particular, which at any time heretofore have beene practised by any chyrurgion; according to the opinion of all the ancient professors of that science. Which is not onely profitable for chyrurgions; but also for all sorts of people: both for preventing of sicknesse and recoverie of health. Whereunto is added the rule of making remedies which chyurgions doe commonly use, with the presages of Divine Hippocrates. 3. ed. London, 1634. D.

The physicians of Myddvai; Meddygon Myddfai; or, The medical practice of the celebrated Rhiwallon and his sons, of Myddvai, in Caermarthenshire, physicians to Rhys Gryg, Lord of Dynevor and Ystrad Towy, about the middle of the thirteenth century. From ancient Mss. in the libraries of Jesus College, Oxford, Llanover and Tonn; with an English translation and the legend of the Lady of Llyn y Van. Translated by John Pughe, and edited by the Rev. John Williams Ab Ithel. Llandovery, 1861. O.

Memorials of the craft of surgery in England. By John Flint South, edited by D'Arcy Power, with introduction by Sir James Paget. London, 1886. O.

Leechdoms, wortcunning and starcraft of early England. Being a collection of documents, for the most part never before printed, illustrating the history of science in this country before the Norman conquest. Collected and edited by the Rev. Oswald Cockayne, M. A. Cantab. Vol. II. London, 1865. Q.

IN MEMORIAM.

HON. CHARLES JOHN MORRIS GWINN.

The Honorable CHARLES JOHN MORRIS GWINN, one of the Trustees of the Johns Hopkins University and the Johns Hopkins Hospital, died at his residence in Baltimore, Sunday, February 11, 1894, in his seventy-second year. The funeral was attended on the following Tuesday, and his body was buried in Greenmount Cemetery.

ACTION OF THE TWO BOARDS OF TRUSTEES.

A joint meeting of the Trustees of the two institutions was held at the University, Monday, February 12, when the following minute and resolutions were adopted unanimously:

Minute.

In founding and administering institutions as complex as this University and this Hospital, there are many parts and many actors. One contributes capital, another suggestion, another experience, another learning and another counsel. The resultant of all these forces is the progress of the undertaking, which, according to their adjustment, may be slow or quick, irregular or steady, disheartening or inspiring.

In the organization and development of the Johns Hopkins foundations the Hon. Charles J. M. Gwinn has been from the beginning a counsellor. It is never to be forgotten that his pen drafted the instruments by which both the Hospital and the University were created, and that in no small degree it is due to his wise foresight that the fundamental articles of both institutions were kept free from those needless restrictions and those embarrassing requirements which often fetter the noblest plans.

With Francis White and the late Francis T. King he was an executor of the will of Mr. Hopkins. He was an original member of both boards, and on the death of Judge George William Brown, in 1890, he succeeded in the University board to the important office of chairman of the executive committee.

His eminence as a lawyer caused him to be the counsellor upon whom both boards relied for legal advice. He never encouraged litigation, but always sought for conciliatory action. In the art of exact and discriminating expression he was remarkably successful, and nothing seemed to give him more pleasure than to reduce to an acceptable form the conclusions reached by his colleagues upon difficult or controverted points. His attendance upon the meetings of the Trustees during a period of nearly twenty years was regular and punctual, and when absent he rarely, if ever, failed to send a written apology. His manners were dignified and courteous; his language was graceful and seasoned with wit. He earnestly advocated the admission of women to the Johns Hopkins Medical School upon exactly the same terms as men, and he drafted the papers by which this result was reached. Under all circumstances he was in favor of maintaining high standards of education and scholarship.

A man of noble mien, of great natural ability, of liberal education, of wide reading in literature, history and jurisprudence, he naturally came into varied and confidential intercourse with the leaders of public opinion in politics and in law, while his abilities as a counsellor were recognized not only by his colleagues, but by the public, who called him repeatedly to stations of dignity and responsibility.

His name is sure to be remembered in the annals of the two foundations to whose interests he was thoroughly devoted.

Resolutions.

Whereas it has pleased Almighty Providence to remove our friend and colleague, the Honorable Charles John Morris Gwinn: Be it

Resolved, That we here record our admiration of his brilliant talents, our appreciation of his constant and efficient services to those institutions with which he has been honorably connected from their foundation, and that we tender our expressions of sincere sympathy and condolence to his family in this the hour of their bereavement and trial.

Resolved, That a copy of the foregoing minute and resolution be transmitted to the family of Mr. Gwinn.

Resolved, That the members of the two boards will attend the funeral in a body.

Remarks in respect to the character and services of Mr. Gwinn were made by several of his associates. Among others, Dr. James Carey Thomas spoke substantially as follows:

"I cannot forbear the expression in a few words of my sense of the great loss that this University has sustained in the death of Charles J. M. Gwinn. In common with those who shared the responsibility of the inception and development of the University, he constantly watched with satisfaction its increasing influence upon the country as well as upon this community. Mr. Gwinn's interest in the affairs of the University deepened with each year of its successful progress, and he became more and more devoted to its service. We can hardly realize at this time that the sudden removal by death of our friend and fellow-trustee, in the midst of his mental activity and usefulness, will henceforth deprive us of his valuable counsel and help."

BIOGRAPHICAL SKETCH.

The following statement of the principal dates in the life of Mr. Gwinn were brought together immediately after his death and printed in the Baltimore *Sun* of February 12, 1894.

Mr. Gwinn was born in Baltimore, October 21, 1823. His father was a merchant and importer of West India products. His early education was received in the schools of Baltimore. He was at one time a student at the University of Maryland in the general educational work which that institution then conducted.

From Princeton College Mr. Gwinn was graduated in 1840 with high honors. Upon his return to Baltimore he studied

law with the late John H. B. Latrobe, and was admitted to the bar in 1843.

In 1849 he was a member of the Maryland House of Delegates, and in 1850 he was a delegate from Baltimore to the Constitutional Convention which framed the constitution of 1851. Mr. Gwinn was the first State's Attorney of Baltimore elected under that constitution. The election took place in 1851, and Mr. Gwinn was the Democratic candidate. His opponent on the Whig ticket was Mr. S. Teackle Wallis. The term of office was four years, and Mr. Gwinn declined a renomination.

He was one of the presidential electors on the Democratic ticket in 1852. This was the campaign in which President Pierce was elected. Near the close of Mr. Pierce's term Mr. Gwinn was sent to Europe on a special diplomatic mission for the national government.

From 1856 to 1875 Mr. Gwinn devoted his time to the practice of his profession. During this period he became, in conjunction with Mr. John H. B. Latrobe, the leading counsel of the Baltimore and Ohio Railroad Company. Mr. Gwinn was counsel for the banking house of Robert Garrett & Sons and for the late A. S. Abell and the late Johns Hopkins. Later Mr. Gwinn became general counsel in Maryland of the Western Union Telegraph Company and the Chesapeake and Potomac Telephone Company.

From the time when he drafted the will of Johns Hopkins, Mr. Gwinn became closely allied with the establishing of the Johns Hopkins University and Johns Hopkins Hospital. He was named as one of the first trustees of both institutions, and held the position until his death.

In the campaign of 1875 Mr. Gwinn was again pitted against his former opponent, Mr. S. Teackle Wallis. Mr. Gwinn was then candidate for attorney-general on the Democratic ticket headed by John Lee Carroll for Governor. Mr. Wallis was the independent candidate for attorney-general. Mr. Gwinn secured the prize, and upon the expiration of his term of four years was re-elected in 1879, when William T. Hamilton was elected Governor.

The assistance of Mr. Gwinn was given and his advice relied upon in framing the national platforms and conducting the national campaigns of the Democratic party in 1876, 1880, 1884 and 1892. He was a delegate to the national conventions of the party in 1860, 1868, 1880, 1884 and 1892. He was usually called upon to represent the Maryland delegation on the committee on platform.

In 1857 Mr. Gwinn married Miss Matilda Johnson, daughter of the late Hon. Reverdy Johnson, who, with one daughter, survives him.

ASSOCIATION OF PROTEUS VULGARIS WITH DIPLOCOCCUS LANCEOLATUS IN A CASE OF CROUPOUS PNEUMONIA.

By Walter Reed, M. D., *Surgeon, U. S. A., Curator Army Medical Museum.*

[*Read before the Johns Hopkins Medical Society, February* 19, 1894.]

I am indebted to Surgeon J. K. Corson, U. S. Army, for the following brief and somewhat incomplete history.

S. H., age 28, soldier, of good physique, was under treatment in the Post Hospital, Washington Barracks, from December 1 to December 9, 1893, with diagnosis of tertian intermittent fever. He was readmitted to hospital at 2.30 p. m., December 10, 1893, with a chill and a temperature of 104°. He had a dry cough and complained of slight pain in right chest. Physical examination revealed nothing of importance, so that the diagnosis of influenza seemed appropriate.

The morning after admission, following a restless night, his temperature was 105.2°. There was nausea and slight cough. At evening, under the administration of an antipyretic, temperature was 104°. During the 12th, 13th and 14th fever continued, varying from 103.8° in the morning to 106.2°, which was registered at 9 p. m. on the 14th; this, notwithstanding the administration of quinine and other antipyretics. December 15th (sixth day of attack) patient was expectorating a small quantity of tenacious sputum, slightly blood-tinged, and there was dullness over base of right lung; a. m. temperature 104.4°, p. m. temperature 103.4°. Signs of lung consolidation not well developed at any time during illness. The patient's pulse, which was rapid and wiry in the beginning, changed at this time to a rapid and extremely feeble pulse, and as there were well-marked signs of impending collapse, hypodermics of brandy were freely administered. Treatment had been supporting and stimulating throughout. Delirium, alternating with stupor, which had been an early symptom, now gave way to more pronounced stupor. Temperature continued high, 104°–104.8°. Death at 4.25 p. m., December 18, 1893. Duration of attack, eight days.

December 16 (seventh day) I received a small quantity of the patient's sputum. This was tenacious and faintly rusty in color. Cover-slips stained by Gram's method showed a few diplococci without capsular staining. The same date 0.5 cc. of this sputum was introduced beneath the skin of a rabbit.

Soldier's autopsy was held 17 hours after death. I am informed that examination was confined to the lungs, and that the only lesion found was consolidation of the lower lobe of the right lung; the remainder of this lung and the entire left lung were normal. I secured a portion of the pneumonic lobe thirty minutes after the autopsy had been made. This embraced the pleural surface and measured 12x8x2 cm. It was solid and had a succulent appearance. Numerous fine granular projections were seen rising from the surface. Its color was reddish-gray on fresh section. The pleura was covered with a delicate layer of fibrin, which, being scraped away, left a dull, gray, lustreless surface. Cover-slips by Gram's method gave here and there what appeared to be characteristic diplococci; in one field three pairs were seen.

The pleural surface was burned, and in the hurry of class-work a culture was taken on an agar slant. Portions of lung were placed in alcohol.

At the end of twenty hours, at 37° C., almost the entire surface of the slant was covered by a moist, grayish-white layer. Cover-slips examined in water gave short, motile rods. Agar plates were now made. At the end of twenty-four hours, at 37° C., numerous small, white, deep colonies, as well as larger spreading surface colonies; no colonies resembling diplococcus l. could be found with low power. The culture appeared to be pure. Cultures from several separate colonies were taken, and these grown upon 5 per cent. gelatine gave colonies with numerous amœba-like processes. The medium was rapidly liquefied. Grown on agar, in gelatine stabs, gelatine rolls, potato and glucose bouillon, no difference could be detected between this organism and a culture of proteus vulgaris obtained through the kindness of Dr. Theobald Smith of the Agricultural Department.

Sections of the lung stained with hæmatoxylin and eosin show the contents of certain alveoli to consist of a large number of red corpuscles, fewer polynuclear leucocytes and epithelioid cells held in a network of fibrin; other alveoli contain numerous polynuclear leucocytes and fewer epithelioid cells with fibrin network. The presence of epithelioid cells together with pigment-holding cells would lead to the supposition that the patient had chronic heart disease. Sections stained with Gram show numerous diplococci. With a view of finding proteus, sections have been stained with methylene blue and eosin and with aqueous solutions of fuchsine. After patient search of many sections a well-marked clump of short bacilli with distinct outlying short rods were found in one instance on a section stained with fuchsine. Further search revealed several small clumps and one short chain, which consisted of bacilli corresponding in size to proteus v., in a section stained with methylene blue and eosin.

To return to the rabbit which had been injected with the sputum on the 16th inst. On the 19th, 20th and 21st the animal appeared to be quite sick, but was better on the 22d, except for loss of weight, which was perceptible. This loss of weight continued from day to day, although the animal took its food as usual. December 31 rabbit died. Autopsy 10 a. m. same day. Emaciation extreme. All organs normal; but little food in stomach. Cultures were taken from blood, liver, spleen and kidney. Cover-slips from the same sources were negative. At the site of the injection there was found an abscess larger than an English walnut, with fluid, creamy contents; its walls were infiltrated with a white caseous material. Cover-slips from the abscess showed numerous polynuclear leucocytes and many short and long rods. Esmarch rolls (agar) were made from the abscess. At the end of 24 hours, at 37° C., cultures from the organs were negative, while that from the abscess showed numerous colonies of an organism which, studied after the usual methods, proved to be proteus vulgaris.

I am aware that this case is a very incomplete one in many respects, and that the omission to take cultures from all the organs of the patient was, in the light of subsequent events, much to be regretted. The attending physician having suspected meningitis as a complication, it was an oversight not to have opened the skull-cap and taken cultures from that cavity. But when one reflects that up to date, so far as I can learn, no human autopsy has ever been studied bacteriologically at the national Capital, I may felicitate myself that I have even been permitted to inject a small quantity of the patient's sputum beneath a rabbit's skin, and have had the opportunity of taking cultures from a portion of the affected lung. Notwithstanding its incompleteness, when we take into consideration the finding of proteus on culture from the lung, the same organism in an abscess of a rabbit produced by the inoculation of sputum of this patient, and the presence of short rods in the lung sections, I believe that we may feel positive that there was in this lung a mixed infection, viz. the association of proteus vulgaris with micrococcus lanceolatus. Which organism is entitled to precedence, whether proteus prepared the way for the diplococcus lanceolatus, or whether it was added to an already established infection by the latter organism, one cannot say. The marked hebetude, approaching the comatose condition, as far as my personal experience goes, is not an early symptom of croupous pneumonia. And, furthermore, if we are to judge by physical signs, this patient, who sickened on the 10th, did not develop lung inflammation until the 15th. According to Booker, extensive observations have led him to the conclusion that proteus plays an important part in the production of the morbid symptoms which characterize cholera infantum. He states that the prominent symptoms in cases of cholera infantum in which the proteus bacteria have been found are drowsiness, stupor, emaciation, more or less collapse, frequent vomiting and purging, with watery and generally offensive stools. Nausea and rapid pulse, marked stupor and tendency to collapse were prominent symptoms in the case which I have reported.

Professor Welch (*Bulletin of the Johns Hopkins Hospital*, Vol. III, No. 27) says that Monti made the interesting observation that the impaired virulence of the diplococcus lanceolatus can be restored by injecting with the cultures into rabbits the products of the proteus vulgaris or other common putrefactive bacteria. He remarks that these observations merit further investigation. In this connection experiments have been instituted in the laboratory of the Army Medical Museum, and later on the result of these investigations will be published.

NOW READY.

VOL. IV, No. 1, THE JOHNS HOPKINS HOSPITAL REPORTS—REPORT ON TYPHOID FEVER.

CONTENTS.

I.—General Analysis and Summary of the Cases. By WM. OSLER, M. D.
II.—Treatment of Typhoid Fever. By WM. OSLER, M. D.
III.—A Study of the Fatal Cases. By WM. OSLER, M. D.
IV.—Notes on Special Features, Symptoms and Complications. By WM. OSLER, M. D.
V.—On the Neurosis following Enteric Fever, known as "The Typhoid Spine." By WM. OSLER, M. D.
VI.—Two Cases of Post-Typhoid Anæmia, with Remarks on the Value of Examinations of the Blood in Typhoid Fever. By W. S. THAYER, M. D.
VII.—The Urine and the Occurrence of Renal Complications in Typhoid Fever. By JOHN HEWETSON, M. D.
VIII.—Typhoid Fever in Baltimore. By WM. OSLER, M. D.

FATTY DEGENERATION OF THE HEART MUSCLE.

By Simon Flexner, M. D., *Associate in Pathology, the Johns Hopkins University.*

The occurrence of fatty degeneration of the myocardium in certain diseases in human beings is even at this time questioned by some authors. Krehl,* in a recent paper, endeavors to prove that there is only one condition, namely, phosphorus poisoning, in which fatty degeneration of the heart can be said to occur with sufficient regularity or in such amount as to be of significance. The autopsy reports of this hospital contain a considerable number of cases which may be regarded as bearing directly on this disputed question, and I have brought them together with this in view. Moreover, in the course of experiments carried out on animals, examinations were made with reference to the occurrence of fatty degeneration in the organs.

Although most of the significance attached to this condition by the older writers, especially Quain and Stokes, has passed away, and lesions of a very serious nature which were ascribed to fatty degeneration of the heart are now known to be caused by other agencies, yet the subject is not without interest.

Wagner† pointed out long since that the anæmic heart presented so many of the gross characters of the fatty heart that deception was very easy. In his analysis of 2000 cases, including a variety of affections, he classified them accordingly as on microscopical examination one-fourth, one-half, nearly all, or all the heart fibres were fatty, into slight, moderate, and severe grades. Considering the frequency of its occurrence, he regarded the slight interest which most physicians showed in it as remarkable, and he accounted for it on the ground that, contrary to other conditions of the heart, it was not capable of detection by percussion and auscultation; moreover, that it almost invariably occurred as a secondary affection.

Our examinations have comprised 170 cases, representing a number of different affections in human beings. All the diagnoses were based on microscopical examinations, and never referred to the gross appearance of the organs alone. The classification which I have adopted is essentially that given by Wagner, and subdivides the degree of fatty degeneration into three groups. The first contains those cases in which a few fibres were fatty, or, if more showed fatty change, the individual fibres contained only few fat droplets. In the second more fibres were affected and the fat in the separate fibres was greater. In the third group all the fibres, or nearly all, contained fat, and often in such large amount that the striation of the fibres was either greatly obscured or lost.

The results of experiments on animals have been treated in a similar manner. Naturally, the conditions which have been studied in these are more restricted than the observations on human beings. They have one advantage over the latter. The length of time which the animals survived the inoculations is in every case known. This fact is important in its bearing on the time required for the development of the changes in the heart muscle.

It is proper to state that in the great majority of cases, but not in all, the animals used were not kept in long confinement in the laboratory under questionable hygienic conditions prior to the inoculation. As a rule, the animals were purchased only a short time before, and were kept under observation for a few days before inoculation, to determine, as far as possible, their healthfulness. Moreover, they were, without exception, in a good state of nourishment and seemed active and well. The operation of secondary causes was, it is believed, excluded to a large extent by the bacteriological study of the cases for the purpose of excluding cases of mixed or secondary infection.

The clinical bearing of the cases reported in human beings is, as a rule, omitted. The reason for this is not because it is believed, *a priori*, that no relation may be found between the condition or degree of fatty degeneration and the clinical picture. Perhaps this aspect of the question may be considered at another time. The object has been to indicate in what class of cases, so far as this material enables one to decide, a pathological increase in the fat in the heart muscle occurs and in what proportion of cases.

On the other hand, we have observed three cases in which such extensive fatty changes in the parenchymatous organs were present that they formed the chief recognized pathological condition at the autopsy. These cases will be given by themselves, with some facts from the respective clinical histories and autopsy records.

Concerning the ability of the microscopical examination to give a trustworthy indication of the extent of the fatty change there is some difference of opinion. Krehl* maintains that the examination of bits of the heart muscle in this way does not suffice for a conclusion. He has brought forward what he regards as strong evidence of the insufficiency of this method, and he strongly recommends the chemical examination.

As valuable as the results of the chemical examination are—and his results are of great interest—it is questionable whether he maintains the point. A considerable part of the heart's substance must be sacrificed in order to obtain portions of tissue from which adipose tissue is absent, and at best only larger pieces of tissue can be utilized for this purpose—larger than are chosen for the microscopical examination. And as Goebel† has pointed out, the sub-pericardial layer must in all cases be sacrificed, and in this layer the heart muscle shows often the most exquisite degeneration.

But his statement that in the majority of instances the fat is found in foci in the heart, and therefore conclusions based on the microscopical examination will be influenced greatly by the chance of the portion examined, which will be equally erroneous if, as in the case of the examination of such a fatty focus, the result be generally applied, as if the contrary should happen, is open to question. It is often, as Goebel‡

* Deutsches Archiv f. klin. Medicin, Bd. 51, S. 417.
† Die fettige Metamorphose des Herzfleisches.

**Loc. cit.*
† Central. f. allg. Path. u. path. Anat., Band IV, S. 721.
‡ *Loc. cit.*

has stated, the case that the fat seems, at first, to be focal in distribution, but closer examination will show that this distribution is only apparent. Among the foci of relatively or severely fatty degenerated areas are places of somewhat slighter change which often unite the whole.

The examinations which we have made consisted in the study of sections prepared as a rule from the wall of the left ventricle, and commonly including the entire thickness of the wall of the ventricle. Often, in addition to this, pieces from the right ventricle and from the papillary muscle of the left ventricle were also examined. The tissues were, almost without exception, examined in the fresh state. This method, with the exception of the use of osmic acid in one of its forms as a fixing and staining agent, is the only reliable one. There is little or no reliance to be placed upon the results obtained from the study of the tissues hardened in Müller's fluid or alcohol. The fat is entirely extracted, and the spaces or "holes" left behind, even if they were always recognizable, cannot be interpreted with certainty.

TABLE I.—SUMMARY OF AUTOPSIES AT THE JOHNS HOPKINS HOSPITAL.

Principal Disease.	Total number of cases.	Number of cases not fatty.	Number of cases fatty.	Degree of fatty degeneration.		
				Very.	Moderately.	Slightly.
Primary valvular lesion of heart	2	..	2	..	2	..
Same with acute exacerbation	8	3	5	1	4	..
Arterio-sclerosis with sec. heart lesion	21	14	7	2	3	2
Typhoid fever	14	6	8	2	1	5
Acute lobar pneumonia	10	5	5	..	1	4
Anæmia	10	3	7	3	4	..
Septicæmia and pyæmia	17	6	11	3	5	3
Acute peritonitis	16	3	13	5	6	2
Tuberculosis of lungs with and without intestinal tuberculosis	22	14	8	4	..	4
Acute miliary tuberculosis. (No lung tuberculosis)	1	..	1	..	1	..
Chronic nephritis, large kidneys	2	1	1	..	1	..
Chronic nephritis, small kidneys	4	1	3	..	1	2
Cirrhosis of liver	3	1	2	1	..	1
Tuberc. pericard	2	1	1	..	1	..
Acute enteritis and colitis	5	2	3	..	2	1
Amœbic dysentery	3	..	3	3	..	..
Emphysema of lungs	2	..	2	..	1	1
Carcinoma	10	4	6	2	2	2
Extensive burns	3	..	3	3	..	..
Pseudo-leucocythemia	2	1	1	..	..	1
Diabetes	1	..	1	..	..	1
Cholelithiasis	1	..	1	..	1	..
Myelitis	1	1	..	..	..	..
Coal-gas poisoning	1	1	..	..	..	..
Fat necrosis of pancreas	1	1	..	..	..	..
Syphilis	2	1	1	1	..	..
Leucocythemia	1	..	1	..	..	1

There are some facts with reference to the accompanying table which call, perhaps, for a few words of explanation. In classifying the diseases the effort was made to separate the cases in respect to the exciting causes of the fatty degeneration. For example, the cases of chronic heart disease in which acute inflammatory processes of infectious origin were present at death are put in a table distinct from those in which this complication was absent. While the acute infections are not in these cases urged as the cause of the fatty change, yet in view of the known efficacy of this factor in bringing about such alterations it seemed desirable to group them together. The failure to make such a distinction by other writers may in part account for the discrepancies observed.

The class of pyæmia and septicæmia embraces both extensive local suppurative processes, as for example joint affections, and cases of general infection with the pyogenic staphylo- and streptococci, with and without definite abscesses in the tissues.

It is understood that any classification can take into account only the principal disease processes. Most autopsies are an ensemble of pathological conditions, and one stands often in doubt before cases of chronic liver and kidney disease which have come to rapid termination through some acute infectious process. In such instances which of the conditions is to be ranked as the principal disease?

The cases grouped under the head of anæmia are likewise of varied character. This group includes a case of death following hemorrhage from the stomach in gastric cancer; other severe anæmias following operations, and especially three cases alluded to in which the degree of fatty degeneration was so marked and embraced all the parenchymatous organs that it formed the principal pathological condition at the autopsy. These cases are given briefly.

B. B., age 27. Diagnosis: hysteria with amenorrhea. Operation of dilating and curetting the uterus performed on September 10th at 10 a. m. by Dr. Robb. Patient very noisy; morphia in ½ grain doses administered at intervals of 3 to 4 hours. After the operation vomiting was constant. Previous to operation the patient had had convulsions; they did not appear subsequent to the operation. Death occurred at 7 a. m., December 11th. Autopsy at 11 a. m., December 11th. Anatomical diagnosis: acute fatty degeneration of heart, kidney and liver. Bronchiectasis and slight broncho-pneumonia and bronchitis. Operation: curetting of uterus.

Body of large, strongly-built and well nourished woman. Subcutaneous fat abundant; muscles pale.

Both of the lungs are adherent to the pleura by old adhesions; neither lung retracts on removal of sternum. The bronchi of both lungs are dilated and contain a considerable quantity of muco-purulent fluid. Around some of the smaller bronchi in the lower lobes small areas of consolidation exist.

The left ventricle of the heart is firmly contracted; the right is dilated and contains soft dark clots and fluid blood. The myocardium of both ventricles, particularly the left, is pale and easily torn. The coronary arteries are normal.

The liver and kidneys, besides being pale and presenting a fatty appearance, are not essentially altered.

The ovaries are cystic, and the left presents a few torn adhesions.

The uterus measures 8 cm. in length; its mucous membrane is roughened, and above the cervix somewhat lacerated.

The microscopical examination of the heart muscle shows it to be black from fat. Acetic acid made no change in its appearance. The fat is in such large amount and so generally distributed that no part of the muscle can be said not to contain it.

Both the liver and kidney are intensely fatty.

Cultures from the organs remained sterile.

Mrs. R., age 28. Had been married two years. No children; no miscarriages. Her last menstrual period lasted from the 3d to 7th of July. About eight weeks before admission (August 21st, 1891) she began to suffer from nausea and vomiting. Nausea has continued almost without cessation.

On admission the face was emaciated, conjunctivæ pale. Pulse 96, full and regular. Examined under ether by Dr. Robb, the diagnosis of pregnancy was made. As the patient seemed to be improved, no operation was performed. She suddenly became much worse and died on September 2nd. The patient's temperature did not rise above 101.8° F. (in the rectum) until day of death, when it reached 102.8°. Autopsy immediately after death.

Body 155 cm. long; fairly nourished; still warm, but rigor mortis already fairly advanced. Subcutaneous fat in moderate amount; muscles pale.

Punctate hemorrhages found in the peritoneal cavity. The abdominal organs, with the exception of the liver and kidneys, which present a distinct and striking fatty appearance, and the stomach which contains several hemorrhagic erosions, apparently are normal.

The lower lobes of the lungs are congested. There are no pneumonic patches to be made out.

The heart contains fluid blood. The valvular apparatus and vessels of the heart are normal. The muscle is pale and flabby.

The uterus measures 11 cm. in length; the cavity 7 cm. It contains a fœtus 2 cm. in length and normal fœtal structures.

Frozen sections of the heart showed a most extensive fatty degeneration of the muscle fibres. The fat was present both in small and large droplets, and no trace of striation could be made out in the muscle fibres. The kidneys and liver were likewise extremely fatty.

Cultures were entirely negative.

A. P., white, age 16. Admitted into service of Dr. Osler, Oct. 1, 1891; died Nov. 1, 1891. Her present illness dates from March 5, at which time she had a chill and is said to have screamed for 12 hours. Later had similar attacks which were controlled by opium.

Her condition on admission showed only considerable emaciation. No organic lesions were detected. Urine was free from albumen. She had various attacks of an epileptiform character. Vomiting set in on 21st of October and continued almost without interruption. Took nourishment well even at this time. She died November 1, at 3 a. m.

Autopsy at 10 a. m. Body extremely emaciated; mammæ alone retain fat. The grade of emaciation is even more marked than is seen in cancer or stricture of the œsophagus.

Peritoneal cavity quite normal. Heart of medium size; the edges of the mitral valve present slight thickening. Lungs congested and show a few early broncho-pneumonic patches. Brain quite normal.

Frozen sections of the heart, liver and kidneys show extensive fatty degeneration.

The cases agree in the absence of other important pathological lesions than the intense fatty changes in the parenchymatous organs. They have all occurred in women, they have been associated with more or less anæmia, and in one case with extreme emaciation.

Our experiments on animals embraced the use of different agents. The common occurrence of fatty degeneration of the myocardium in diphtheria, as has just again been pointed out by Romberg,* is borne out by our experiments on animals. From the following table it will be observed that in 19 experiments embracing guinea-pigs, rabbits and kittens, dead of inoculation with the bacillus diphtheriæ or its products, fatty degeneration appeared in 14. Further, the degeneration did not depend on the duration of the infection, but it occurred especially in those cases in which the infection was rapid in its termination. It would, therefore, appear to depend more on the intensity of the poison than on the time of its action.

In the case of the filtrate of the diphtheria bacilli, where a given quantity only of the poison is introduced, this difference is not noted. In four cases of death from this cause, fatty changes were present in two, and these corresponded to the longest periods of life succeeding the inoculation. Whether this difference is merely apparent, or whether it depends on some difference in the action of the soluble virus as compared with the living organisms, more experiments are needed to decide. It is conceivable that during the short period of increase of the bacilli in the body of animals, sufficient poison is produced to bring about the fatty changes in the same short time which is required to destroy the animal. In all cases a much larger dose of the filtrate than of the culture was employed, and we know from Roux and Yersin's† experiments that the poison may sojourn in the body for weeks and even months before it causes death. Hence the two conditions, death and fatty degeneration, may go together, although it is not to be assumed that the former depends on the latter. There are other very extensive lesions produced by both agents‡ which must be taken into account.

The animals which succumbed to inoculations with toxic doses of dog's serum that were not immediately fatal showed without exception fatty degeneration of the heart muscle. It is worth mentioning that in only one instance was the fatty degeneration severe, and that was in the case of an animal which received a quantity of serum far greater than the immediate toxic dose. The serum used in this instance had been heated to 55° C. for 30 minutes, and although it was not without effect both on the respirations of the animal and on the red blood corpuscles, the latter as proven by the occurrence of hæmoglobinuria, yet the animal soon recovered from the depression which followed the injection and lived seven days.

The results obtained from the inoculation of animals with the tox-albumens derived from the higher plants, ricin§ and abrin, are not without interest. These substances, as shown

* Zeitschrift f. klin. Medicin, Bd. 48.

† Annales de l'Inst. Pasteur, 1889, n. 6, p. 273.

‡ Welch and Flexner, Johns Hopkins Hospital Bulletin, Nos. 15 and 20.

§ Ricin: the toxic albuminous principle obtained from the castor bean, ricinus communis. Abrin: obtained from the jequirity bean, abrus precatorius.

by Ehrlich,* possess properties which bring them into close relationship with the bacterial toxines. Under essentially similar conditions of dose calculated on body weight, abrin produced severe fatty changes in two out of three cases in rabbits, whereas ricin in two out of four cases caused in these animals only slight changes.

TABLE II.—RESULTS OF INOCULATION.

Substance inoculated.	Animal.	Length of time survived inoculation.	Total No. of cases.	No. of cases not fatty.	No. of cases fatty.	Degree of fatty degeneration.			
						Very.	Moderately.	Slight.	
Diphtheria bacilli	guinea pig.	38 hours.	1	..	1	..	1	..	
" "	kitten.	38 "	1	..	1	..	1	..	
" "	guinea pig.	41 "	2	..	2	1	1	..	
" "	rabbit.	54 "	1	..	1	..	1	..	
" "	guinea pig.	60 "	1	..	1	..	1	..	
" "	guinea pig.	72 "	2	1	1	..	1	..	
" "	kitten.	4½ days.	1	1	..	..	..	..	
" "	guinea pig.	4 "	2	..	2	1	1	..	
" "	guinea pig.	5 "	1	1	..	..	..	..	
" "	kitten.	6½ "	1	..	1	..	..	1	
" "	rabbit.	8½ "	1	..	1	1	..	..	Post-diphtheritic paralysis.
" "	guinea pig.	20 "	1	..	1	..	1	..	
Filtrate from culture of bacillus diphtheriæ	guinea pig.	48 hours.	1	1	..	..	..	..	
" " "	guinea pig.	54 "	1	1	..	..	..	..	
" " "	guinea pig.	5 days.	1	..	1	..	1	..	
" " "	guinea pig.	26 "	1	..	1	..	..	1	
Serum of dog	rabbit.	13 "	1	..	1	..	1	..	
" "	rabbit.	25 "	2	..	2	..	1	1	
" "	rabbit.	7 "	1	..	1	1	..	..	Received serum heated to 55° C.
Sol. of abrin in 10% NaCl sol.	rabbit.	20 hours.	1	..	1	1	..	..	
" " " "	rabbit.	25 "	2	1	1	1	..	..	
Sol. of ricin in 10% NaCl sol.	rabbit.	18 "	3	2	1	..	..	2	
" " " "	rabbit.	20 "	1	1	..	..	..	..	
" " " "	guinea pig.	48 "	1	..	1	1	..	..	
" " " ..	guinea pig.	5 days	1	1	..	..	..	..	

The underlying conditions on which the occurrence of fatty degeneration depends have been the subject of much study. There can, we think, be no doubt that in human beings the condition occurs with such persistency in certain diseases as to indicate a causal connection. Notwithstanding the recent study and criticism of Krehl, it must be admitted that there are disease processes in human beings in which it is often present. The latter author admits but one condition in which it is uniformly present in such amount as to stamp it as related to the pathological process, viz. phosphorus poisoning. He denies its significance in such other affections as chronic heart disease and severe forms of anæmia.

The views of Recklinghausen and Zenker† seem much more to accord with the general experience. In one class of affections, namely, chronic heart disease with hypertrophy and dilatation of the heart, there can be no doubt of the common occurrence of fatty degeneration, even if at the present time it is not possible to associate it more definitely with the lesions and to ascribe to it a rôle in the production of the failing compensation.

The endeavor to make the fatty metamorphosis of the proteid constituents of cells depend on the diminution of oxygen supplied to them has not met with success. Even the attractive hypothesis of A. Fraenkel,‡ based on experiments on dogs in which the excretions had in consequence of starvation fallen to a mean, and which became increased after constriction of the trachea, cannot at this time be maintained. In phosphorus poisoning, in which, according to Bauer's * experiments, the excretion of N is increased with a great increase in the fat found in the tissues, the destruction of red blood corpuscles plays no essential part. Indeed, in those cases in which after the injection of phosphorized oil there was a destruction of red blood corpuscles, this was shown to depend on the acid character of the oil, and not to be due to the phosphorus itself. However, in his experiments the oxygen absorption was diminished in one case as much as 45 per cent., and the carbonic acid excretion 47 per cent. The effect of the latter was not to cause an increase in the fat production out of proteids, although it influenced its elimination.

The experiments of H. Meyer,† on the other hand, show that fatty changes may set in before the blood pressure, as commonly happens, is reduced by phosphorus poisoning, or any alteration in the gaseous constituents of the blood has occurred. And with other deoxidizing substances, such as iron and platinum, which also cause a reduction of the blood pressure, no fatty changes can be detected in the poisoned animals.

The effects of depriving animals of a portion of their blood was shown by Bauer ‡ to result in increased proteid disin-

* Deut. med. Wochenschrf. 1891.

† Verhand. des X Internat. Med. Congress, Band II, Abtheil. iii, S. 67 u. 74.

‡ Charité Annalen, 2. Jahrgang (1875), S. 309.

* Zeitschrift f. Biologie, Bd. 7 u. 14.

† Archiv f. experimentelle Pathologie, Bd. xiv.

‡ Zeitschrift f. Biologie, Bd. 8.

tegration and the accumulation of fat in the tissues. Less fat is, after such blood abstraction, destroyed, whether it is made in the tissues or introduced from without. And, in opposition to the experiments of Perls,* in which by repeated abstractions of blood from dogs he succeeded in producing a condition of marasmus associated with slight fatty degeneration of the heart muscle, detectable by the microscope, Meyer† found that after depriving rabbits of such a quantity of blood that the oxygen value sank to one-half its normal amount, no change of this kind occurred in the organs.

Bearing on the relation of anæmia to the production of fatty changes, we have the recent research of Kraus and Chovstek,‡ who measured the oxygen absorbed by human beings in a state of anæmia, and found that even in those cases in which the number of red blood corpuscles was reduced to 1,000,000 per cubic millimetre, and the hæmoglobin to 20 per cent, no diminution occurred. That the essential cause of the extensive fatty changes found in pernicious anæmia is the blood condition is, in view of these results, rendered extremely doubtful.

The influence of elevation of temperature has at different times been urged as a cause of fatty changes in the organs. Liebermeister, who regarded fever as the only common phenomenon in a variety of conditions leading to such changes, regarded the elevation of temperature as the cause. The experiments of Wickam Legg, Litten, Naunyn and Welch shed new light on this question. The first two observers never failed to find fatty changes in the organs of animals kept at an elevated temperature. Wickam Legg claims to have found it as early as twelve hours after the beginning of the exposure, and Litten,§ who experimented on guinea-pigs, and kept them in a double-walled metallic cage at the temperature of 98.8° F. (37° C.) with dry, or 96.6° F. (36° C.) with moist air, never failed to find fatty degeneration at the end of 36 to 48 hours. Naunyn,‖ who used a larger and better ventilated box, failed to find any parenchymatous or fatty degeneration after he had kept rabbits for two weeks at higher temperatures than Litten employed. Welch, on the other hand, although he used a box larger than Naunyn's, found that in rabbits which had been kept for at least a week with an average rectal temperature of 106° F. (41.1° C.) fatty degeneration in moderate degree was present. He says: "The higher and less fluctuating the internal temperature, the more certain was the degeneration to appear. I could reckon upon obtaining rabbits with well-marked fatty degeneration of the heart by keeping them for ten days with a rectal temperature between 107° F. (41.7° C.) and 108° F. (42.2° C)."

Welch* showed that animals which had been kept in the hot-box for four days previous to inoculation with the bacilli of swine plague and then replaced, succumbed after 36 hours, and, at the autopsy, the most extreme fatty degeneration of the organs was found. Little or no degeneration of the heart is found after the infection with this organism when the animal is kept at the ordinary temperature.

As to the effect of fatty degeneration on the heart muscle it can be said that, according to the experiments of Welch just mentioned, rabbits kept for three weeks in the hot-box and in which there was every reason to believe that fatty degeneration of the heart muscle existed, showed no symptoms of heart paralysis, and after removal from the box remained perfectly normal. The carotid pressure of animals which had been kept in the hot-box from ten days to two weeks showed no diminution.

From our table of cases derived from human beings, as well as from the experiments on animals, it will be seen that in certain infectious processes fatty degeneration of the heart muscle is more likely to occur than in others. It is a fact not without significance that two diseases in which weakness of the heart's action is commonly observed, *e. g.* typhoid fever and pneumonia, are remarkable for the entire absence of fat or its presence in slight amount, rather than the opposite.

When we consider that in that form of intoxication in which the fatty changes are most exquisitely found, namely, in phosphorus poisoning, the direct injurious influence on the oxidative processes of the body can be excluded. That, further, in the anæmias which occur in human beings and can be produced experimentally upon animals, fatty changes are often absent or occur in only inconsiderable degree; and finally, that the effect of fever alone is all but established to have a relatively slight importance in bringing about such changes as act injuriously upon the heart's function, therefore it seems unavoidable to connect with the occurrence of fatty degeneration in its severer forms in the infectious diseases of man and animals a disturbance of cell metabolism more nearly like that which phosphorus intoxication induces. The researches of Voit, Bauer and others have shown that the fat is produced out of the proteid constituents of the cells.

* Quoted by Recklinghausen, Handbuch d. allg. Pathologie, S. 387.

† *Loc. cit.*

‡ Wiener klin. Wochenschr. 1891, No. 33.

§ Virchow's Archiv, Bd. 70.

‖ Arch. f. exp. Pathologie u. Pharmacologie, Bd. 18.

* The Cartwright Lectures, Medical News, Phila., 1888.

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PROCEEDINGS OF SOCIETIES.

THE JOHNS HOPKINS HOSPITAL MEDICAL SOCIETY.

Meeting of December 18th.

A Case of Healed Aneurism of the Aorta.—DR. BARKER.

The case which I wish to present to-night is of considerable interest on account of its rarity. I have to thank Dr. Osler for permission to make a few remarks to the Society concerning its history.

The individual, a colored man, claims to be forty-three years of age, but is almost certainly over fifty. He complained when first seen in the dispensary on December 31, 1891, of cough, shortness of breath, and slight swelling of the legs. No satisfactory anamnesis could be obtained, owing to the low grade of intelligence of the patient. Three important points could be made out, however, in the previous history: first, hard work; second, a probable syphilitic infection; and third, excessive alcoholic indulgence. He had been accustomed to carry heavy weights all his life, and during the civil war in the sixties had a "rough time of it," sometimes suffering severe privation. He denied having had any venereal disease, but the evidence is on the whole in favor of a syphilitic infection some twenty years ago. From his family history we learn that his wife has had two abortions, for which no cause could be assigned. Among the previous diseases from which he had suffered there was none which appeared to have any bearing upon his condition on admission.

In the absence of any direct history with regard to a tumor in the thorax, we were astonished to find there, on physical examination, what appeared to be a very serious condition, and the following note on the case was dictated: "Man of fairly large frame, musculature firm and well developed, numerous old scars on legs; lips and mucous membranes rather pale; tongue large, flabby, slightly coated, and indented at the edges by the teeth. Patient sits up in chair, but is short of breath, and answers questions with difficulty. There is no marked difference in the pulse at the two wrists. The walls of the radials are considerably thickened, and the vessels feel like whip-cords when rolled beneath the fingers. The brachial and femoral arteries pulsate visibly.

Thorax large, epigastric angle wide; in the upper part of the thorax in the parasternal region on the right side is a globular swelling, extending from above the right sterno-clavicular articulation above to the third rib below. This pulsates visibly with each beat of the heart. On palpation there is a heaving systolic impulse, and also a very evident diastolic shock over the projecting area. There is dulness on percussion over this area, the flatness being most marked at the right border of the sternum. Tracheal tugging can be obtained readily and is a well-marked sign. There is decided accentuation of the aortic second sound over the area occupied by the tumor, but no distinct bruit can be made out. The apex-beat of the heart is visible and palpable in the fifth space in the left anterior axillary line. The heart dulness goes over into the aneurismal dulness. The first sound at the apex has a rumbling character, but there is no distinct murmur, either systolic or diastolic. The lungs are negative. The liver dulness cannot easily be outlined; the spleen is not palpable. There is slight movable dulness in the flanks. No glandular enlargement made out."

The presence of this pulsating swelling on the right side of the sternum, the diastolic shock over the swollen area, the marked tracheal tugging, the signs of general arterial disease, the absence of any evidence of aortic insufficiency, or of solid intrathoracic tumor, made the case seem clear. We arrived, we thought very easily, at the diagnosis of arteriosclerosis with aneurism of the arch of the aorta, and of that part of the arch in which an aneurism gives rise to physical signs rather than to clinical symptoms, viz. the ascending portion.

The patient was advised to enter the hospital for treatment, but he declined to do so at that time. A rather unfavorable prognosis was given, and he was told to go home, to rest in bed, and restrict his diet, large doses of iodide of potassium being ordered at the same time.

Nothing more was seen of the patient until April 24th, 1893, when he again applied to the dispensary for treatment, and was seen by Dr. Ramsay, who made a note to the effect that there was a decided diminution in the pulsation.

On the seventh of October of this year he entered Dr. Osler's wards, but left after a few days. He re-entered the ward in December and has been brought down here to-night. As you see him, his condition is very different from that described in the note made two years ago. There is still swelling and distinct bulging in the upper sternal region on the right side, especially at the right sterno-clavicular articulation. Over this area there is marked dulness, and on deep palpation in the episternal notch a firm resistant mass is met with. There is now scarcely any pulsation, and tracheal tugging is very indistinct, if it can be said to exist at all. The signs of arteriosclerosis are perhaps even more marked than when previously seen. The apex of the heart is still displaced to the left, and now a definite systolic murmur can be heard at the apex. There is no diastolic murmur, nor is either of the sounds at present particularly accentuated over the dull area. On admission the patient had a little œdema of the legs, and was passing urine containing a trace of albumen, a few granular and hyaline casts with occasional red and white blood corpuscles. It was difficult to understand the meaning of the physical signs in the upper part of the thorax, until the earlier record made in the dispensary was referred to. The only available explanation seems to lie in the assumption that the aneurismal sac has been slowly filled with clots, which later perhaps have been replaced in whole or in part by fibrous tissue. Naturally, one hesitates before making such a conclusion concerning the condition *intra vitam*, and the further progress of the case will be watched with interest. If it should turn out that the case before us is really one of healed aneurism of the aorta we shall have to modify somewhat our ideas as to the hopelessness of the disease.

Two Cases of Excision of the Knee-joint in which Hansmann's Plates with ordinary Screws were employed.—DR. HALSTED.

CASE 1. Woman, 47 years old. Two months ago she had a miscarriage which was followed by pyæmia. Both knee-joints became infected. The right one recovered prior to her admission to the hospital. On admission, six weeks ago, the left knee-joint was distended with a puro-synovial fluid. This fluid was withdrawn soon after admission through an aspirating needle, and the joint subjected to a prolonged washing with a solution of hydrarg. bichlor. (1–1000). The pain, which had been great, subsided after the aspiration and washing, and the temperature, which had been 99° to 101°, became lower for about one week. Then the symptoms of pus in the joint reappeared and the aspiration and washing were repeated in two weeks, this time with perhaps less success than at first. The patient absolutely refused further operative treatment for three weeks. In the meantime the inflammation of the joint made rapid strides. The joint was distended to its utmost capacity with pus. The tissues about the joint were infiltrated and the skin was red and tense. Ultimately, and when the patient's general condition had become so bad that her life was almost despaired of, she consented to an operation.

A transverse incision was made through the skin and patella, then two longitudinal incisions, making with the first the letter H. The internal longitudinal incision opened a dissecting extra-capsular abscess. The joint was, as I have said, filled with pus. The cartilages were still intact. The crural ligaments were softened,

but had not yet parted. A horizontal slice about 1.5 cm. was taken from the tibia, and a somewhat thicker slice from the femur. Such portions of the femur cartilages as were not removed with this slice were shaved off subsequently. I make it a principle never to leave exposed cartilage in a wound. The walls of a dead space should never be of tissues which cannot furnish granulations readily. The bones were held together by Hansmann's plates and my screws.

The knee is already almost perfectly firm,* although it is only three weeks since the operation. The wound has healed absolutely *per primam*, notwithstanding the fact that the operation was performed through actively suppurating tissues, and notwithstanding possibly the still more important fact that the patient's vitality was at a critically low ebb at the time of the operation. I have repeatedly called your attention to the objections to Hansmann's screws which, beyond the flange, have a shank long enough to project through the skin wound. They must be ultimately removed, and they necessarily lead to suppuration. My screws are so short that when screwed home they are almost flush with the plate. They are designed to remain in the wound. It has occurred to me that possibly staples over stiff wire might well replace the plate and screw method. The staples could be very fine and might be clinched on the other side of the bone if necessary.

Case 2. Woman, 24 years old. This patient had a tuberculous knee-joint which was treated for many months with iodoform-glycerine injections, without much success. Excision was finally decided upon and performed four weeks ago. A modified Helferich's method of excising was employed. The bones are cut in such a way that the convex lower end of the femur fits more or less accurately into the concave upper end of the tibia. We usually make use of this method, or a modification of it, in excising tuberculous knee-joints. The semicircular cut into the head of the tibia sometimes reveals and partially or wholly removes tuberculous foci which might be overlooked if the bone were simply trimmed in the usual way. By this method, or rather a modification of it, the cartilage of the femur is thoroughly removed and the condyles are so trimmed that any tuberculous invasion of them is almost sure to be exposed. In short, we make a virtue of necessity, for in trimming the bones to the desired shape we may eradicate the disease.

When the knee-joint has been excised in this way, and it has not been necessary to remove too much bone, the femur locks into the tibia so firmly when the leg is extended that there is little tendency to displacement. When the plates and screws are used the bones are held still more firmly in position.

Helferich's method of excising the knee-joint was devised for joints which are anchylosed in a flexed position. He believes that with the semicircular incision he gets less shortening of the limb than when he cuts out the usual wedge-shaped piece of bone. We are very much pleased with the screw and plate method. The results have been surprisingly gratifying. In the four or five previous cases in which we have used them the anchylosis has been absolute. In no case has there been suppuration, and in no case have the plates and screws caused the patient uneasiness.

Case 3. Appendicitis.—Male, æt. 30. I exhibit this case not for any particularly interesting feature of its own, but because I wish to call your attention to a diagnostic sign of appendicitis which I believe to be of considerable importance. My experience would teach me that this particular sign is probably present in all cases, and in all stages, except one, of the disease.† It is this: one cannot press with the fingers into the false pelvis on the affected side so deeply as on the healthy side. In the earliest stages it is a spasm of the muscles which prevents one from dipping into the iliac fossa. Later it is the adhesions between the cæcum and abdominal paries, and occasionally between the omentum and abdominal paries. And, finally, it is the exudate itself. At times two, and at times all three of these obstructing factors may be present. It is the exception that one of them is found alone. It is only to the first, and afterward to the second of these factors that I particularly wish to call your attention. The muscle-spasm may be so great and its edges so sharply defined that inspection reveals a fullness, and palpation detects what seems to be an induration. This muscle-spasm may be partially or wholly eliminated by the proper application of the Paquelin cautery. When the patient is fully anæsthetized no trace of the spasm remains. We have seen some cases so early that nothing but the spasm of the muscle has prevented us from dipping normally into the iliac fossa. More frequently, however, in addition to the muscle-spasm there have been adhesions between the cæcum and the parietal peritoneum. It is possible to foretell the presence of these adhesions, in the absence of any considerable exudate (of anything more than a few drops of pus) by palpation of the brim of the pelvis and of the iliac fossa. In this patient the adhesions between the parietal omentum and parietal peritoneum prevented us from dipping normally into the pelvis on the right side. After separating these adhesions we at once encountered the erect central half of the appendix in cross section. The appendix had been bent upon itself at a right angle or less, and had ulcerated through at about its middle. The peripheral piece was adherent to the abdominal wall. There was a little pus, three or four drops at most, encapsulated between the abdominal paries and the peripheral end of the central piece and the central end of the peripheral piece of the appendix. A point of great importance in the operative treatment of these cases, and one to which we give perhaps an unusual amount of attention, is the packing off of the uninfected portion of the abdominal cavity from the infected portion prior to opening the abscess, however small this abscess may be. And even when we believe that there is no abscess we pack off the general cavity with just as much care prior to the separation of the adhesions which glue the cæcum to the parietal peritoneum; and, in the absence of such adhesions, prior to separating the adhesions which bind down the appendix. Should pus be present it is carefully caught and disposed of in such a way that there is perhaps the least possible danger of infecting the general peritoneal cavity. I fear that I cannot well describe to you our method of packing off and protecting the general peritoneal cavity. We use a good many sponges of gauze superimposed upon each other in such a way that should the innermost ones become soiled the outermost remain clean. It is well, if possible, to so pack the outermost strips of gauze that they may remain undisturbed and form a part of the final packing of the wound. For adhesions form with surprising rapidity (in a few minutes) which it is undesirable to disturb. We have operated upon thirty-four cases of appendicitis, and without a death if we except the nine perfectly hopeless cases which had acute suppurative peritonitis before they were operated upon. Five cases of appendicitis with a less desperate form of peritonitis were saved by operation.

Of four cases of appendicitis without peritonitis operated upon by me outside of the hospital, all recovered from the disease; and of two with general suppurative peritonitis, both recovered from the peritonitis, but one of them died from hemorrhage about two weeks after the operation and when he was believed to be surely convalescent.

Report of Cases.—Dr. Bloodgood.

Case 1. Strangulated Hernia.—This old man had a double hernia for a great number of years, and a week before he came in, the right one became irreducible and he had symptoms of strangulation. We operated on him and found the very interesting condition that the bowel was strangulated within the sac, and only one knuckle of the bowel was constricted. It was quite blue, but on relieving

*January 18, 1894. The knee became absolutely firm within five weeks of the operation. The patient is perfectly well and entirely free of pain.

†When the patient has general peritonitis and the abdomen is excessively tympanitic the sign to which I refer may be masked.

the constriction the circulation returned and we put it back. He was such an old man (65 years) that we thought there was more certainty of a cure if we took out the testicle. He had the very interesting condition, after the operation, great distension of the intestines, confined chiefly to the zone above the umbilicus; there was no tenderness. He has made an uncomplicated recovery, and you see the wound has healed typically.

CASE 2. RUPTURE OF RIGHT ABDOMINAL MUSCLE.—This case has been in about five weeks. He was caught between two freight cars about eight o'clock in the morning and was brought here a short time afterwards in severe shock; so great that in the morning we thought he was going to die and we put him to bed. He had a tumor occupying the right umbilical region, and we could feel that the rectus was ruptured, and thought this tumor was the intestine protruding through. In the evening he was a little better, and we decided to operate because we thought there was some injury to the intestine. We made an incision and found the intestines were directly below the skin, and the rectus and other abdominal muscles were ruptured and contracted, and hemorrhage had occurred into them. We had to hurry very much, as his pulse was bad. We reduced the intestines after suturing the peritoneal coat (which had been torn and the muscular coat exposed over a small area of the caecum and ileum). We found no hemorrhage into the abdominal cavity, but we found an extravasation of blood under the entire parietal peritoneum and in the mesentery. Everywhere the peritoneum looked black. We sutured the muscles loosely, packed the wound with iodoform gauze, as on account of retraction we could not cover the intestines entirely. We did not close the skin, fearing sloughing of the injured muscles. The packing was taken out gradually and also the sutures in the muscles. Healing proceeded rapidly by granulation, and only a small portion of the lower end of the rectus sloughed. The wound you see is almost healed. There has been no fever and no complication.

NOTE.—The patient has returned to work with an abdominal corset, the portion over the area of rupture being laid with zinc plate. He seems as strong as before his injury.

DR. FINNEY.—There is one feature in the last case which Dr. Bloodgood has not mentioned—the condition of the man's eyes. When he was brought in the eyes were very much ecchymosed and very prominent, and there was considerable hemorrhage behind the conjunctivæ. The men who saw the accident say his head was not struck by anything. Of course there must have been a great deal of pressure exerted from the abdomen. In what way that caused the conjunctival hemorrhage I am not prepared to say, but certainly it came on at once, as the men who pulled him out of the car say it was present then.

DR. HALSTED.—The same thing was observed at the Chambers-street Hospital at the time of the crush of the Brooklyn Bridge. At that time a great many people were killed, and when brought to the hospital this protrusion of the eyes was a very striking feature in some of the cases, particularly in the women and the shortest men. The tremendous pressure below caused the congestion in the parts above. The bodies were unnaturally white, whereas the heads and necks were dark purple and in some cases almost black.

DR. BLOODGOOD.—We have now in the hospital a second case demonstrating this condition. The man was crushed by an elevator, both clavicles, left scapular and most of the ribs of the left side were fractured and this side flattened. Head not injured. In both cases the condition has disappeared.

Meeting of January 15, 1894.

Myomectomy during Pregnancy, involving Opening of the Abdominal Cavity.*—DR. STAVELY.

We have learned by a gradual process of deduction from cases reported in medical literature, that operations performed upon the pregnant uterus, or upon the uterine adnexa during pregnancy, are not attended by any extreme danger. Myoma complicating pregnancy is rather uncommon on account of the tendency of this growth to cause sterility, or in the event of pregnancy, early abortion. Virchow and Scanzoni state that fully 50 per cent of women bearing myomata are sterile.

If pregnancy occurs notwithstanding the existence of this growth, the necessity for surgical interference must be considered, and depends upon the individual peculiarities of each case. Thus a small myoma may not complicate the course of pregnancy or interfere with labor, no matter where situated. An interstitial myoma of the upper zone of the uterus, even though of considerable size, usually offers no mechanical obstruction to labor, and unless symptoms arise which render an operation necessary, should not be touched.

Tumors which are situated in the early months of pregnancy in the lower part of the uterus, may gradually ascend from the pelvis, and occupy such a position at term that labor is in no way complicated by their presence.

A pediculated myoma, blocking the pelvis and causing severe pressure symptoms, may frequently be freed from its confined position by careful manipulation. This is sometimes accomplished more readily by placing the patient in the knee-chest position. Manipulation may fail either on account of the cramped environment of the tumor, or on account of adhesions which bind it so firmly in the pelvis that attempts at separation may be attended by disastrous consequences.

Two cases cited by Phillips aptly illustrate some of the dangers of too forcible or too persistent efforts to displace these tumors. In the first case, operated upon by Knowsley Thornton, for incarcerated pediculated myoma, furious bleeding which threatened the patient's life followed the forcible displacement of the tumor after the abdominal incision had been made.

In the second case, operated upon by Hanfield-Jones, a myoma the size of a fœtal head was impacted and adherent in the pelvis. Before the operation (a Porro-Cæsarean), persistent efforts were made to liberate the growth, but without success. The patient died of peritonitis, and at the autopsy the tumor was found to be much "bruised," and Phillips, who saw the case, believes that the rough manipulation might have had some bearing on the fatal termination.

The dangers from surgical operation in these cases are shock, abortion, hemorrhage, intestinal obstruction and infection. Shock depends in a great measure upon the dexterity of the operator and the duration of operation. Abortion depends upon the amount of the manipulation, upon the extent of the involvement of the uterine tissue, and upon the absence or presence of a tendency to abortion. If the uterine cavity is opened, abortion almost inevitably occurs. Hemorrhage is to be feared on account of the greater vascularity of the uterus during pregnancy. This applies only to the sessile myomata, and a number of operations performed for the removal of these growths show that even this fear is somewhat exaggerated. Abortion and hemorrhage after operation, in the majority of instances, may be averted by absolute rest in bed and the judicious administration of morphia. Infection is to be avoided by carrying out a thoroughly aseptic technique.

The dangers from non-interference in these cases are abortion, hemorrhage, sepsis, rupture of uterus, pressure symptoms, intestinal obstruction and mechanical obstruction to labor.

The free hemorrhage induced by interstitial myoma frequently tends to detach the ovum. Gusserow, however, thinks it is not yet proved that abortion is more frequent when myomata exist.

Several writers state that when pregnancy goes to term, hemorrhage is almost certain to occur in those cases in which an interstitial myoma is situated opposite the placental attachment, and that when abortion occurs under such circumstances the hemorrhage is always profuse and sometimes fatal. Although it is claimed by some writers that placenta previa is more frequent in these cases,

* Abstract of paper to appear in the Johns Hopkins Hospital Reports.

the research of Nauss seems to disprove this statement, as he only found this anomaly twice in 241 cases.

Myomata, as a rule, grow very rapidly during pregnancy, after which they undergo a degenerative process, offering a good opportunity for infection. Peritonitis and rupture of the uterus may follow this retrogressive change in these tumors. Pressure symptoms and pain, which is often quite severe, are often present.

Statistics collected for the purpose of ascertaining the results of non-interference in these cases are interesting. Lefour reports 307 cases with 39 abortions and 14 maternal deaths; Nauss, 241 cases with 47 abortions; Süsserott, 147 cases with 8 maternal deaths after the application of forceps, 12 after version, and 13 after artificial removal of placenta. Jetter records 215 deliveries in 165 cases with 64 maternal deaths. Gusserow reports 228 cases, of these 123 died. Suturgin states that scarcely one-fifth of the cases complicated with myomata terminate without surgical measures, and that about one-third of the mothers and one-half of the children die during or soon after labor.

Two cases of pregnancy, complicated with myoma, were operated upon by Dr. Kelly in the Johns Hopkins Hospital in 1892. The following brief synopsis of their histories is given:

Case I. Mrs. S., æt. 25, admitted March 7th, 1892. Married eleven months; menstruated first at eleven years, never regular, last period December 17th, 1891; complained of occasional sharp pain in the ovarian and sacral regions, severe headache and nausea.

Examination under anæsthesia.—Diagnosis: Pregnancy complicated by myoma uteri. Operation, March 9th. Simple, uncomplicated myomectomy. Myoma about the size of an orange situated on the posterior and right side of the fundus. Patient made an uninterrupted recovery and was delivered at term of a living, healthy child.

Case II. Mrs. W., æt. 35, admitted July 23d, 1892. Multipara, menstruated first at thirteen years of age, flow regular. Married twice, first time fourteen years ago, second time four months before admission to hospital. Last menstrual period three weeks after second marriage. Tumor noticed in right ovarian region by patient, thought to be growing rapidly. For last week severe cramp-like pains in the abdomen, radiating into back and down right leg.

Examination.—Myoma about 8 cm. in diameter, growing from the right cornu uteri. The uterus was enlarged and extended 15 cm. to right of median line.

Diagnosis.—Pregnancy complicated by myoma. Operation, July 27th, 1892. Incision along outer border of right rectus muscle revealed a myoma at the right cornu uteri. Myomectomy, free bleeding until sutures were introduced and tied. Recovery uninterrupted, delivered at term of a living child.

In reviewing the literature of this subject 31 additional cases have been found. Pozzi reports 17, Landau 17, and Routier 15 cases, each writer having duplicated the cases of the others, with a few exceptions.

The indications for myomectomy are not always clear. An incarcerated myoma, or one which is causing serious pressure symptoms, or a myoma which constantly threatens abortion in cases where, for reasons of inheritance, it is desirable that pregnancy should continue, or where the life of the patient is endangered by constant and profuse hemorrhage, call for operation.

When only the safety of the mother is concerned, one of the following operative procedures may be adopted: induction of abortion or premature labor, craniotomy, symphysiotomy, myomectomy, the Cæsarean, the Porro, or the Porro-Cæsarean operation. Craniotomy, except in cases of fœtal death, is practically an operation of the past. Symphysiotomy is indicated in properly selected cases, while the graver operations, the Porro and Cæsarean sections, are occasionally called for when myomectomy would be of no avail. In five years, from 1885 to 1890, 157 Porro operations were reported with 48 (30 per cent) maternal deaths and a fœtal mortality of 25 (15.9 per cent).

During the year 1887, 53 Cæsarean sections were performed with a maternal mortality of 20.8 per cent, and in 1888, 79 operations with a mortality of 24 per cent. The infant mortality in the 132 cases was 5.3 per cent.

An analysis of the table comprising 33 cases of myomectomy performed during pregnancy which I have collected from the medical literature and present this evening shows the following results: Maternal mortality 24.25 per cent, or 8 deaths in 33 cases. Of these, two were due to hemorrhage, one to "long standing aortic disease," and one to peritonitis. Three died after the occurrence of abortion, probably from infection, and in one case the cause was not specified. Twenty-four, nearly 80 per cent, of these cases have been reported since 1884. Eliminating the cases operated upon prior to 1885, the maternal mortality is 16.66 per cent.

Since 1889, 17 cases have been reported, the death rate being 11.75 per cent.

The excellent results obtained in the latter cases are unquestionably due to improved surgical technique.

In the 33 cases, 9 abortions and 1 miscarriage occurred, giving a fœtal mortality of 30.3 per cent. Twenty women were delivered at term of living children. In three cases in which the mother died, no statement is made concerning the occurrence of abortion.

According to the variety of tumor, whether pediculated or sessile, death occurred as follows: in 16 cases tumor pediculated, 4 deaths, including the patient with "aortic" disease; one case aborted and one gave birth to a still-born child, after which she died. In fifteen cases of sessile myoma, six abortions occurred, and four of these patients died.

As a result of the above analysis the following conclusions have been drawn: (1) operations performed during the last eight years have been attended with much better results than in former years; (2) operations upon sessile myomata are more disastrous to the fœtus than are those upon pediculated tumors; and (3) *myomectomy*, in properly selected cases, for pediculated or sessile myoma is comparatively safe and thoroughly justifiable in properly selected cases.

Dr. Kelly.—Dr. Stavely's paper is a valuable one, as the tables which he has presented represent a great deal of original research and include a large number of cases which have not been noted in other tabulations. Former statistics have dealt with numbers which were too small to be satisfactory. The association of myomata with pregnancy is a very interesting and important condition, and it is a matter concerning which we want such definite percentages as are furnished by this paper.

Both of the cases operated upon by me went to term and were delivered naturally without any special difficulties. In the first case cited I would not operate to-day as I did then, because I would not feel justified in opening the abdomen to take out a myoma as large as an orange in the fundus of the uterus. I would, however, remove a myoma in the lower part of the uterus of less size than an orange. We have now in Ward H a woman eight months pregnant, having a sessile myoma deep down in the pelvis, attached to the cervical portion of the uterus. To remove such a myoma would be very difficult, and the better way is to let the case go to term and do a Cæsarean section.

Nature seems to protect the myomatous woman from pregnancy, as they are usually sterile, and if they become pregnant, often miscarry. Barriers are thrown about such persons in several ways. The presence of a myoma which invades the uterine cavity not only causes discharges which dislodge the ovum, but may from its position act as a barrier to conception. A large percentage of these cases have inflammatory troubles which bind down and encapsulate the ovaries, making them practically extraperitoneal, and the woman is rendered sterile in that way. Where pregnancy occurs in myomatous cases it is better as a rule to let it go to term, but where the myoma will prove a serious obstacle to delivery it is better to operate, provided the case is seen in the earlier months of the pregnancy.

Lantern Slides as an aid to Clinical Teaching.—DR. KELLY.

I wish to show the value of lantern pictures for class teaching and have selected a few typical slides for reproduction on the screen.

In many ways this method of demonstration is superior to any other, as the object on the screen is so much magnified that the successive steps of an operation or minute points of interest in a specimen can be successfully placed before a large audience.

In plastic and abdominal operations but comparatively few spectators can get sufficiently close to follow the minor details upon which the success of the operation so often depends, but by this method all have an equal view, and special points in technique which it would be impossible to demonstrate in any other way can be made clear.

Lantern pictures are also of the greatest value in showing the variations in contour of the abdomen in myoma, ascites, ovarian cyst, etc., as successive slides which bring out the differential points in diagnosis can be thrown upon the screen, and the student can obtain a much more definite idea of this subject than would be possible from a didactic lecture or demonstration upon a patient. After the significant points are thus brought out he is prepared to appreciate the practical demonstration.

I am greatly indebted to my friend, Mr. Murray, who has taken much interest in this subject and has prepared the slides which are shown this evening.

The speaker then demonstrated by lantern slides the following:

Papillary cyst, specimen of pyosalpinx, extra-uterine pregnancy, elephantiasis of the labia, contour views of the abdomen distended by myoma uteri, ascites and ovarian cyst, cystoscopic instruments, postures in cystoscopic examination, catheterization of ureters by the direct method, clitoridectomy for carcinoma, showing steps of operation from beginning to completion (5 slides), vaginal hysterectomy (15 slides), various forms of prolapsus uteri, and steps in the operation for its radical cure (11 slides), ovarian cyst delivered from abdominal incision, showing method of ligating pedicle, position of surgeon and assistants around operating table during abdominal operation.

NOTICE.

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Letters of inquiry can be sent, which will receive prompt answer, or personal interviews may be held.

Under the directions of the founder of the Hospital the free beds are reserved for the sick poor of Baltimore and its suburbs and for accident cases from Baltimore and the State of Maryland. To other indigent patients a uniform rate of $5.00 per week has been established. The Superintendent has authority to modify these terms to meet the necessity of urgent cases.

The Hospital is designed for cases of acute disease. Cases of chronic disease are not admitted except temporarily. Private patients can be received irrespective of residence. The rates in the private wards are governed by the locality of rooms and range from $15.00 to $35.00 per week. The extras are laundry expenses, massage, the services of an exclusive nurse, the services of a throat, eye, ear and skin or nervous specialist, and surgical fees. Wherever room exists in the private wards and the condition of the patient does not forbid it, companions can be accommodated at the rate of $15.00 per week.

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